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ABSTRACT

A reflector, a method of producing same and a method of creating high omnidirectional reflection for a predetermined range of frequencies of incident electromagnetic energy for any angle of incidence and any polarization. The reflector includes a structure with a surface and a refractive index variation along the direction perpendicular to the surface while remaining nearly uniform along the surface. The structure is configured such that i) a range of frequencies exists defining a photonic band gap for electromagnetic energy incident along the perpendicular direction of said surface, ii) a range of frequencies exists defining a photonic band gap for electromagnetic energy incident along a direction approximately 90° from the perpendicular direction of said surface, and iii) a range of frequencies exists which is common to both of said photonic band gaps. In an exemplary embodiment, the reflector is configured as a photonic crystal.